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Contents for Week of May 9, 1927. Vol. VI. No. 11.

1. The Border Which Brings the Balkans Into the Headlines Again.
2. What Rays Do for Us.
3. The Mystery of Poison Darts in the Amazon Valley.
4. A Trip to Delphi Where a Greek Tragedy Will Be Acted in the Ancient Theater.
5. Casablanca: Again Prominent in Aviation News.

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A PITTSBURGH CONCERT BY RADIO RECEIVED 2,000 MILES UP THE AMAZON RIVER

(See Bulletin No. 2)

HOW TEACHERS MAY OBTAIN THE BULLETINS

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The Border Which Brings the Balkans Into the Headlines Again

JAGGED mountains, deep river gorges, rocks and roadless country, along with primitive peoples and a turbulent history, mark the eastern and northern borders of Albania, where the rival interests of Italy and Yugoslavia are being adjusted. These barriers have also helped to keep back the enemies of the highlanders and have fortified in them their intense love of independence.

Before the Christian era the ancestors of the present Albanians occupied practically the whole of the peninsula north of Greece to the Danube. The Albanians are, in fact, the remnants of the oldest race in eastern Europe. The conquest of the region by Rome did not displace these early inhabitants; but when the Slavs burst southward into the peninsula in the seventh century, A. D., only those who lived in or fled to Albania kept their blood and customs unaltered by the newcomers. The Albanians, therefore, have an age-old dislike for the Slavs, who are represented to-day by the new Yugoslav state.

Italy on One Side; Yugoslavia on the Other

It has ever been the fate of the Albanians to struggle constantly against some powerful neighbor. First it was Imperial Rome, next the Slavs, then Turkey. When Turkish power waned, Albania found Austria coveting her lands. Just before the World War, Austria had succeeded in placing a Germanic prince on the throne of the newly created Albanian state, but this arrangement did not last long. Since the World War Albania has found herself between two forces. On the east and north, Yugoslavia has advanced her frontiers; on the west, Italy, separated only by the narrowest part of the Adriatic, has shown a special interest in Albania.

The eastern frontier of Albania is much less isolated to-day than before the World War. Then the region had just been liberated from Turkey and had been little developed. Monastir, second among the cities of Turkish Macedonia, had rail connections only southeastward to Saloniki, the metropolis. Now a line also extends northward, connecting with the trunk railway into old Serbia.

The region about the two large lakes, Ohrida and Presba, midway of the present Albanian-Yugoslav line, was also isolated. Now a new railway, from Uskub and the heart of Yugoslavia beyond, reaches down to the city of Ohrida on the lake. This lake country of the Yugoslavian borderland has both geographic and historic interest. The claim has been put forth for Ohrida that it is "the clearest lake in the world." Fish may be plainly seen swimming about at a depth of 60 feet or more. Chestnut forests cover the slopes of the surrounding hills.

Roman Road to the East Led Through Albania

By the shore of Ohrida ran one of the most famous of the old Roman roads, Via Egnatia, the highway to Constantinople and the East. This road, parts of which remain to-day, led across Albania from the present port of Durazzo, up the River Shkumbi, and by way of Lake Ohrida, Monastir, and Saloniki (then Thessalonica).

Along the eastern border of Albania Mohammedanism is strong. In Monastir, Ohrida, Dibra, Ipek, and Prizren the minarets of numerous mosques rise against the hills. In all these Yugoslav communities Albanians furnish an important element in the population.

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HARVESTING OLIVES IN GREECE

Growing olive trees remains one of the major industries of Greece even as it was in the days when Greece was in her glory. The country produces 25 quarts of olive oil per capita annually, and the olive is second only to the currant in public esteem. The scraggy, silver-leafed trees form a patch of dusty green on almost every Greek landscape, from which the forest trees have long since disappeared (see Bulletin No. 4).

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What Rays Do for Us

WHAT is the most useful thing you know about? The scientist probably would tell you "a ray of sunshine," because the sun's rays literally make possible the world as we know it.

But do we really appreciate how much a light ray does for us? Do we comprehend how much heat rays, radio waves, X-rays, and other rays enter into our lives each hour of the day?

The nature of rays has been described and explained in two Geographic News Bulletins ("The Ray Family, Which the World is Eager to Know," February 7, 1927; and "Flying Messengers from the World of Atoms," April 25, 1927). Now we come to the question, "What do rays do for us?"

Sun's Rays Make Life Possible

But for the warmth and light flowing to us through 93 million miles of "space," the earth would be a lifeless cinder, without vegetation and without even the lowest animate forms. As it is, the rays or waves of heat and light flow to us in a mighty stream, for all practical purposes unending, and in this continual bath of life-giving rays we very truly "live and move and have our being."

Our essential diet of rays is fresh as well as potent. Because of the almost inconceivable speed of light and heat waves (186,173 miles per second), the sunbeam which strikes you this instant left its far-away source only eight minutes ago.

It is not only by warming us directly and by keeping our seas and streams from being eternally frozen that the sun's rays benefit us. Every good thing that we have, except some of the minerals and ores, can be traced to their beneficent work. The soil upon which our plants live has been washed from the original cheerless lump of ash and stone by the rain which the sun's rays lifted from the seas and cast down on the land.

Each Plant a Factory Operated by the Sun

Plants which grow in the soil can themselves live only when bathed by sunshine. Plants not only exist because of heat and light waves from the sun, but, fortunately for mankind and the animals, they contrived millions of years ago an ingenious trap for extra energy from the rays, and this they store away. This trap is a mysterious substance called chlorophyll, the green coloring matter in all soil-growing plant leaves. When the rays strike chlorophyll they manufacture cellulose, starch, and sugars; and on these products the life of the animal world is built. Every plant, then, is in reality a separate factory, operated by waves of energy from a "powerhouse," 93 million miles away, through its chlorophyll "motor."

These factories turn out directly various commodities that man must have: vegetables, fruits, and nuts that make up a large part of our diet; cotton, flax and other fibers which contribute largely to our clothing and draperies; the woods which help to build our houses and implements; and many other substances which are necessary in our daily life. Indirectly these "factories" supply our remaining food and clothing; for our food animals produce our meat from a vegetable diet, and so, too, our wool and silk and mohair are the indirect products of the ray-built vegetable world.

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A CORN-SHELLING BEE IN YUGOSLAVIA

A group of women and children have gathered to shell the crop of one farmer. In the background are two fodder stacks for cow feed during the winter months. Indian corn or maize is one of the Americas' contributions to the world. It is an important crop through many sections of the Balkan States.

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The Mystery of Poison Darts in the Amazon Valley

AN EXPEDITION has been organized in France to penetrate the upper reaches of the Amazon River and search for a mysterious and potent plant which Indian witch-doctors use.

Plant poisons employed by natives of the Amazon basin for deadly tooth-pick arrows, for killing fish, and for ceremonies, have long excited the curiosity of white explorers in South America.

Since 1539, when Orellana, one of Pizarro's followers in Peru, sailed down the Amazon, men have tried to discover the secret of the poisoned darts which "kill an ox in twenty minutes and a monkey in ten." Only a few tribes can make the strange poison, the formula of which, after 400 years' search, is still a secret. One German scientist spent two years with one tribe in the fever forests of Brazil, saw natives make "urari," as it is called, but finally had to leave—without the secret.

Silk Cotton Tree Supplies Feather for Arrow

Urari is supposed to cast out fear and produce death without pain and is probably the same as the drug, "caapi," which other explorers have told about.

One investigator writes that the arrows, shot through blowpipes, consist of a point of wood or bone, not more than an inch long and the size of a toothpick, to which is attached a little tuft of the airy fiber of the silk cotton tree, which is as light as thistledown and will not pack like cotton fiber. The point, he said, is dipped in a thick solution of the poison, dried, and is ready for use.

Later he observed the effect of an arrow on a deer. "After deliberate aim our hunter fired. The animal gave a slight start as it felt the prick of the arrow on its flank. At the end of a minute, or a minute and a half at most, its head dropped a little, as if it were sleepy. When the hunter saw this he rose and stepped out in plain sight. The deer turned its head and looked at him, and moved forward, not away from him. After another minute the professor and I rose, and all three walked quietly to within reach of the deer.

"It made no movement to run away, but watched us intently, and shifted its position a little. Absence of fear was the only observable change, until at the end of three minutes more; then it lay down, not falling, but as naturally as a cow or sheep when ready for sleep. We all approached to its side and the hunter laid a hand on its shoulder. It looked up at him but showed no resentment nor fear. Eighteen minutes after it was struck it was dead."

Poison is a favorite weapon of the Indians. They even use it to catch fish. First they will dam up a creek and then dump a moderate poison in the water upstream. Soon the fish come to the top and the natives scoop them into a basket, thus collecting a week's supply of food in a few minutes.

The great Amazon River was actually named in the belief that a ferocious tribe of wild women, similar to the mythical women of that name, lived on the banks of the king of rivers. Orellana, the Spaniard, reported he was attacked by a band of female warriors with bows and arrows. Later it was determined that the "female warriors" were a tribe of natives, who wore, in place of clothes, a thin sheet of bark with a hole in the middle to slip over the head, and belted at the waist. This costume is used to this day.

Bulletin No. 3, May 9, 1927.

UMI

It is not only the rays of the present that contribute to our well being. Sunbeams that millions of years ago built tropical vegetation which was fossilized into coal to-day warm our houses and turn the wheels of our factories. The rays that left the sun weeks or months, or at most years ago, are helping us in still another way. They evaporated water from the sea which later fell as rain and was stored up behind dams. When this imprisoned water is made to turn dynamos the electricity that comes to us over wires to light our homes and toast our bread is only the beneficent sunbeam in another form.

How Heat and Radio Waves Help Us

How we turn heat rays to account is well known. They fly from our radiators to make our homes livable in winter, they cook our food, they produce steam for many of our powerhouses, and in numerous other ways they are harnessed for man's benefit.

Within recent years we have harnessed another group of waves which before this time, since the beginning of the world, went unused by man. These are the Hertzian or radio waves which now, all over the world, are carrying their burden of music and the spoken word, and even are transferring photographs and motion pictures. Inventors are seeking to place other burdens on the strong, young shoulders of the radio wave, and assert that it is only a question of time until they will carry power which may turn wheels far from the source of energy.

Even the little known waves, shorter than those of light, are now doing their bit to push man's civilization forward. The ultra-violet ray has for many years played an important part in photography. Now its value in improving human and animal health is being recognized. Ordinary window glass does not permit ultra-violet rays to pass through, so that in reality our windows, made to admit light and warmth, are barriers against one of Nature's chief life-giving forces. Special glasses which permit ultra-violet rays to pass are coming into wider use, especially in hospitals, where patients may thus be given the benefit of one more force to help them to health.

X-Ray Has Performed Wonders For Health

Since its discovery a generation ago, the X-ray has performed innumerable services, chiefly in permitting photographs to be taken of flesh-covered bones and internal organs, and in the direct treatment of certain diseased conditions. But the X-ray is so potent that it can bring harm as well as good, causing tissues to wither away or become infected when exposed too long to the powerful waves. Man has learned to tame this ray, however, and is even finding new uses for it, as is indicated by recent experiments which show that seeds exposed to X-rays produce greater yields than those untreated.

One of the rays to become known most recently is the Gamma-ray thrown off by radium. This is in reality a super-X-ray and has found its greatest field in carrying farther the work of its close relative.

A Cosmic Ray Perhaps Not Connected with the Sun

The most mysterious of the rays is that which has come to be known within the last year or so, the Millikan or Cosmic ray, which is the ultimate at the present time in vibratory rate and shortness. It is estimated that there are 635 trillion of these rays to the inch. So far, man does not know the origin of these infinitesimally small rays, nor has he been able to utilize them. Apparently they do not come from the sun, because they reach the night side of the world as well as the day side. One theory is that they are given off by far away nebulae—solar systems in the making. They penetrate so deeply when they strike that it requires 6 feet of solid lead to stop them. The boldest hypothesis in regard to their effects is that the life of every animate cell depends upon its bombardment by these tiny waves from the heavens, and it even has been suggested that life itself was originated by them.

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A Trip to Delphi Where a Greek Tragedy Will Be Acted in the Ancient Theater

DELPHI, the site of the Oracle where ancient Grecians sought advice on their troubles or ambitions, will be repeopled this week.

But tourists and pilgrims who meet at Delphi, beginning to-day, will consult no oracle unless art be an oracle. They gather in the ancient Delphic theater to see a performance of Aeschylus' tragedy, "Prometheus Bound." In addition there will be classic Greek dances and Greek games.

"From Piraeus (port of Athens) to Itea, the port of Delphi, small Greek steamers ply daily, making the voyage in about eight hours," writes Alexander W. Weddell, in a communication to the National Geographic Society telling of a trip to the famous shrine.

A Gigantic Theater Set for a Tragedy of Titans

"We left the Piraeus early on a May morning. There was still a dash of freshness in the air which made one welcome the warm sunshine. The course lay between Salamis and Aegina, straight to the mouth of the Corinth Canal. On arriving at the mouth of the canal we were able to enter almost immediately, and the 4 miles were traversed in about twenty minutes.

"Once in the Corinthian Gulf, the little vessel plunged ahead, having on one side the fertile Achaen coast, beyond which lay a range of graduated heights, and on the right, and in full view throughout the day, the unbroken mountain range, with the thrilling summits of Helicon, Parnassus, and Kirphis outtopping all.

"Delphi, to describe it geographically and exactly, is on the steep southern slopes of Mount Parnassus. The general view suggests the auditorium of a gigantic theater, set for a tragedy of Titans, 'great clouds like ushers leaning, Creation looking on.'

Ancients Believed Delphi the Center of the World

"By the ancients this spot was considered the center of the world and was called 'the navel of the earth.' From remotest times Delphi, under the name of Pytho, was a place of pilgrimage. At a certain point in the side of the hill was an opening in the ground, from which, from time to time, noisome vapors arose. These were said to have the power to intoxicate bystanders.

"A temple was built over this opening. Immediately over it was a golden tripod, on which sat a prophetic virgin, later a matron, whose words, unintelligible except to the initiated, were taken down and subsequently communicated in hexameter verse to the inquirers by the temple priests.

"It will be recalled that the ambiguity of these utterances saved the reputation of the priests in doubtful cases. In the vestibule were carved the famous sayings of the seven sages: 'Know thyself' and 'Nothing too much.'

Prohibition Law Inscribed at Delphi

"The treasure contained in the temple must have been immense, for, apart from the rich offerings presented to it by kings and private individuals, many of the Greek states made it the depositary of their most valuable possessions.

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FREEING MANDIOCA OF ITS POISON

Amazon Indians are experts in poison. Without knowledge of how to remove poison they would be unable to eat their staple food, mandioca. The large woven tubes filled with pulp are squeezed by the steady pull of a weighted pole or lever. The pulp is then washed with water and squeezed again, until it is free from its harmful ingredient.

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Casablanca: Again Prominent in Aviation News

CASABLANCA, Morocco, again figures in aviation news, in connection with the departure of a French aviator on a new attempt to make a non-stop flight between mainland Africa and mainland South America.

It was at Casablanca that the Uruguayan trans-Atlantic flyers recently found refuge after they had been robbed and imprisoned by Moorish tribesmen. For some time the port has been the terminus of France's air route to Morocco.

Casablanca was founded by the Portuguese about a decade before Columbus discovered America, but the newcomers held it only a short time when the natives routed them and set up a Moslem stronghold. It was occupied in 1907 by the French, who began improvements that have made this port the show city of Morocco.

Hotel Window a Ring-side Circus Seat

A fortune was spent to improve the harbor, modern houses and buildings were constructed, streets were broadened, and are kept clean. Hotel accommodations attain European standards.

From a city with a population equal to that of Elgin, Illinois, Casablanca has grown by leaps and bounds until it now has nearly as many inhabitants as Kansas City, Missouri. The pedestrian could easily imagine himself in a European city were it not for the Africans of midnight black, chocolate brown and tan complexions. One-half the inhabitants are Moslems; slightly more than a third are French, Spanish and Italian, and other Europeans, and the rest are Jews.

The price of a room in one of Casablanca's hotels not only affords European comforts but also the equivalent of a ring-side circus seat. An automobile rolls by with a prosperous French business man or a fez-bedecked Turkish merchant; wealthy sheiks stroll along in their flowing white garments and tightly wound turbans holding each others' hands; dignified French officers in medal-bedecked uniforms are ousted from the paths of little grain-laden donkeys with barefoot Moors astride; and now and then, plodding along in awkward fashion, three or four moth-eaten, cud-chewing camels pass by, ofttimes followed closely by a small future "ship of the desert."

France Poured a Fortune into City and Built a Harbor

Thickly sprinkled among this seething mass of humanity of various breeds and blends are the ever-present, noisy, street hawkers, darting here and there with their homemade rugs, sweetmeats, and hammered brass-ware.

Why France poured a fortune into Casablanca was a mystery to Europe. It had one of the worst natural harbors on the coast. The low, rocky shore lay open to the strong west winds and the lashing waves of the Atlantic. No river runs through the city to the ocean. But the appropriation was partly used for the construction of breakwaters and harbor improvements that have been dominant factors in the city's development to the second largest city in the protectorate. Ocean-going vessels that anchored perilously off the coast can enter Casablanca's port to-day.

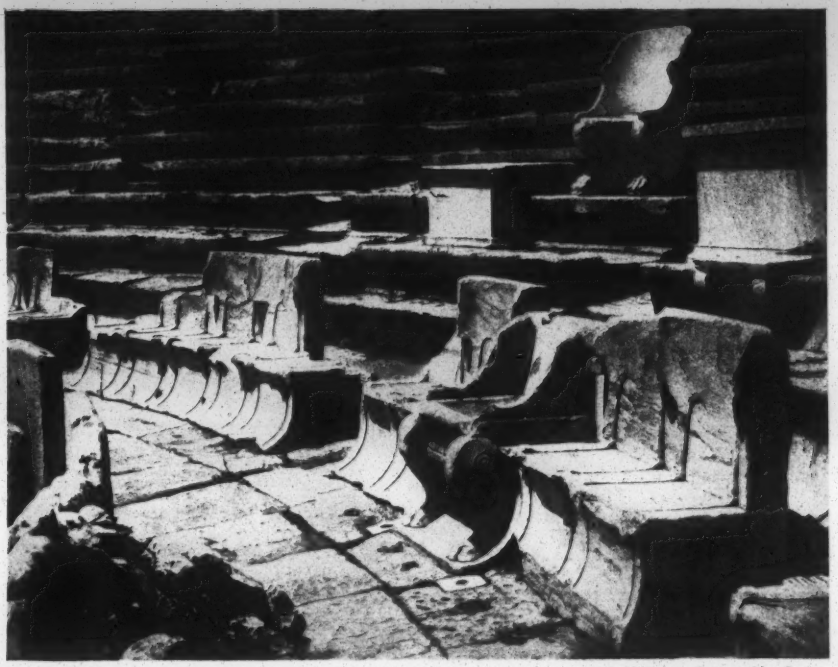
Casablanca also has electric lights and power and a modern water works.

"The remains seen to-day are those of the structure erected in the fourth century, B. C. Earthquakes and floods and the hand of man have done their worst, until there is now little left of what must have been a structure of unusual beauty in a land of wonderful buildings.

"The theater at Delphi is still in an excellent state of preservation. From the seats one commands a view across and up the valley. Far below lies the road over which the pilgrims passed. The acoustics, as is usual with ancient Greek structures, are almost perfect, and the effect of Keats' Ode, though said here in an alien tongue, had rare potency and charm.

"We had brought our lunch and sat down on the green carpet to eat our meal, being careful first to pour a libation to the gods. Our archeological friend laughed as we did this, and pointed to an inscription dating back more than 2,500 years, which forbade the bringing of wine into the inclosure."

Bulletin No. 4, May 9, 1927.



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ROWS OF CHAIRS IN THE THEATER OF DIONYSUS BELOW THE ACROPOLIS, ATHENS

The theater accommodated about 16,000 spectators. In the foremost row were marble chairs, the one in the center being reserved for the priest of Dionysus. Other chairs bear inscriptions denoting their use by priests or other dignitaries. The two blocks of marble on the third tier of seats probably supported the throne of the Emperor Hadrian. Throughout the theater were statues of the tragic and comic poets, the most prominent being the bronze figures of Aeschylus, Sophocles, and Euripides.

Railroads now connect the city with Morocco (Marrakesh), the capital of the protectorate, and other North African points. Daily air service is maintained between Casablanca and Toulouse, France. Planes fly every two weeks to Oran.

Market a Model of French Rule

The market-place, perhaps, impresses one more than any other feature as an illustration of French influence. It is spacious, well ventilated, and nearly odorless. Inspectors are constantly on the watch. The buyer knows that any article exposed for sale has already been examined by experts who are not slow to condemn food that has fallen under suspicion.

Brick, lime and phosphate manufacturing, printing and shipping comprise the major industries of Casablanca, while the natives in the surrounding regions are successful farmers and herdsmen.

Bulletin No. 5, May 9, 1927.

For further reference see: "Across French and Spanish Morocco," by Harriet Chalmers Adams, *National Geographic Magazine*, March, 1925.

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BRINGING A WESTERN SEWING MACHINE TO THE HAREM: CASABLANCA

Casablanca, having more European residents than any other city in Morocco and being the first to receive Western innovations, is the one where the sewing machine more easily finds a place in a Moslem home. The men are the tailors here rather than the women. The woman carrying the machine is a servant.